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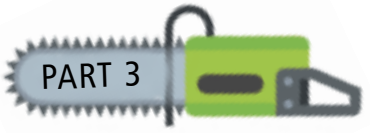
To Cut or Not to Cut?

Decision making in forestry is more complicated than just to cut, or not to cut, any particular tree. Though in the end, it all comes down to just that. The consequences can be large and long lasting.



In previous installments (Parts 1 and 2), we considered the underlying philosophies and overall objectives in forest ownership. This time, we look at discerning priorities for each stand, matching them to your objectives to create a management plan, and the conundrums for individual tree or group selection.

Whether you have 50 acres or 50,000 acres, the management plan starts with a map that discerns differences in forest cover, and information about each cover type, or stand. This descriptive information includes the species composition and soil qualities for that stand, along with the age, or ages, of the main canopy trees. Total stocking is critical, along with tree sizes, acceptable versus unacceptable growing stock, and mature versus immature components. We also need to know of any health problems like insects, diseases, or other risk factors. Timber volume by species and diameter gives an indication of value, which is helpful. Many other factors can be reviewed, including wildlife habitat and potential, aesthetic and historic resources, along with any rare, threatened, or endangered species or unusual habitats.

Previously, we looked at clarifying your goals and philosophies, and now is when they need to make sense. It is typical that most owners of "nonindustrial" forestland (tracts under 1,000 acres or so) have mixed objectives of short- and long-term income, aesthetics and recreation, and some interest in wildlife. This is true multiple-use management. Finding the best balance is the key to success. And different stands may be best ascribed to meeting some objective. Initial review of the stand descriptions might reveal some good matches with particular goals. That is when things are easy.

For example, if there is a need for short-term cash flow, and a particular stand is mature and valuable,

An example aerial land map showing various tree harvest areas.

I have often heard: "It's not all about the money" to find out that the money is pretty darned important!

then a regeneration cut is a good choice. The options might include clear-cutting and replanting, clear-cutting with natural regeneration, or one of the shelterwood options. Other obvious matches might include overstocked immature stands with opportunity for commercial thinning, or "no cut" areas, such as immature stands with no commercial value, or wildlife attributes like deer winter cover. Aesthetics might be most important close to the house or along the best trails.

After the easy choices are gleaned, discerning priorities gets more complicated. Some woodlots have crisp distinctions between stands due to past harvesting, farming influence, or soils, and some are more like a batch of stew. One scoop has a few more potatoes and another has more beef, but they all taste the same. This is when the overall objectives are most important, as they create the criteria to make decisions.

The Big Questions

In a broad sense, the first choice for each stand is "do something now" or "do nothing now." This might or might not mean to do something later. Another choice is to clear-cut the whole thing, or leave the stand to grow. This might seem drastic, but you are not considering all the options unless you start here. If there is something that could be done, then the next choice is "Is the stand mature or immature?" For mature stands, you consider the regeneration options. For immature stands, there are partial cut options of thinning, weeding, and crop tree release. Some stands are not clearly immature or mature, and may be multiple aged, or made up of several species that mature at different rates like poplar, white pine, and red oak. There may be mature and immature portions. There are many further options in two-aged and uneven-aged management. Do the mature, high-risk or defective trees make up a commercial volume for a harvest? These are the questions for each stand.

Another aspect of applying your philosophies and objectives to your forest stands is the balance of age classes. Over wide areas, we as foresters would like to see some balance between old, young, and middle-aged forests for forest health, wildlife habitat, and sustained products. This includes even-aged stands, stands with two crisp ages, and stands with several ages mixed together. You probably don't have all this on a 100-acre woodlot, but your goals might include having more than one age, or to develop a truly uneven-aged forest over time. This will be impacted by your aesthetic considerations. We all like the look of mature, even-aged stands, but they don't last forever. The best examples are the result of a lifetime of active management. An even-aged stand will eventually be regenerated by a heavy cut or overstory removal, and many owners of small woodlots would prefer to maintain more canopy. This leads us to two-aged and uneven-aged techniques on these ownerships, regardless of the forest condition. Certainly, there are forests well suited to particular techniques, but the landowner's goals override that.

Crisp silvicultural goals create another framework for difficult decisions, and the silvicultural guides for each forest type can be very helpful. They often have a decision key, where you are guided to a choice by inputs of the stand condition. But they are only guides, so there are different ways to come to acceptable conclusions.

These specific goals and treatments are enumerated in a complete forest management plan. This should include a summary and schedule of activities, along with the supporting information for the decisions in each stand. The prescriptions should be clear enough to guide the landowner, forester, and logger toward the objectives. A written forest plan is often required to qualify for favorable property tax rates, for tree farm and other certification, and is an excellent tool to guide the landowner. You invest in tools, and this one is important. It might need to be adjusted as new conditions turn up, like storm damage in the forest, financial needs in the family, or changes in markets.

Implementing the Plans

Once a decision for a partial cut is made, whether thinning an immature stand, creating truly uneven-aged conditions, or a shelterwood/two-aged system, the individual tree decisions to cut or leave are overlapping and often conflicting. As complex as this is, it is our simplest analysis to think one tree at a time. There are different criteria for each tree:

- Is it mature, overmature, or defective?
- Is it acceptable growing stock and immature?
- Does it have risks like insects, disease, decay, or windthrow?
- Is it growing at an acceptable rate?
- Does it have an acceptable financial rate of return, or too much risk?
- Does this tree add to the harvest more than it adds to the residual stand?
- Does it detract from the residual stand or regeneration opportunity?
- Is it a seed source for regeneration or wildlife?
- Does it have other wildlife considerations to cut or leave: den or nest habitat, etc.?
- Does the tree meet particular product goals?

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• Are there aesthetic considerations such as sun vs. shade, overall look, legacy and landmark trees, longer range vista, forest accents, fall foliage palette, etc.

When we are marking partial cuts, we are thinking of all these things at the same time. Calculus and clear-cuts would be easier. You can see that any particular tree might have four reasons to cut it, four reasons to leave it, and three where it might be optional. We usually start with a framework of the stand objectives for overall stocking, species composition, and structure from the forest plan. We might go into a middle-aged stand knowing that poplar and red maple are likely to be harvested and sugar maple and yellow birch will be retained, for example. But this process is more complicated with uneven-aged goals, and where we have to think about groups. Now we are looking at a whole group of an acre or two with the same questions, and you have to look ahead at the nearby acres to see the patch in perspective. We might be reviewing areas for patch cuts, no treatment, and partial cutting in some groups. It is especially difficult where that stand has only subtle differences on each acre, but the landowner has specific goals for uneven-aged management. So, group-cutting is more complicated than individual tree decisions.

You can see that clear-cutting is relatively simple. The decision is made to regenerate the forest, and there may be further options to retain some trees for seed or wildlife, to scarify or do other "site prep," to replant or allow natural seedlings to grow. But the tree harvesting decision process is far simpler, and is better suited to larger ownerships. There are wildlife and other benefits, and this is a reliable way to regenerate many forest types.

The best decisions are well thought out, based on good information, and framed in reasonable objectives for each stand.

Project Goals

Each project might have specific goals that are beyond your "management plan" or the goals of the silviculture. For example, we are doing a project that involves a major access improvement, building a road and clearing a house site. From the landowner's perspective, that is the crisp goal, and harvesting trees is a means to pay for the long driveway. Fortunately, there is a mature section of sugar maple with the value to pay for it. We have scheduled a regeneration harvest in the maples, and more moderate treatments close to the house. The landowner is getting the house site, driveway and recreational trails, and moving ahead the forest management plan.

Another client is building a pole barn, and has softwood plantations to thin. But he needs a certain list of particular logs for the frame. He can sell excess logs and pulp, and saw some logs for siding, but he needs some of the best logs for the frame. Normally, thinning leaves the best growing stock. But for a project like this, cutting a dozen of the best trees meets a reasonable goal, as long as the thinning retains suitable stocking and acceptable trees.

A young couple just purchased a farm. Most of the woodlot has been treated with uneven-aged techniques, and a recent harvest leaves it in good shape for another decade of growth. The new owners have a desire to cut their own firewood. There is a stand close to the house, on level ground, which is the easiest place to get their wood with a farm tractor. This forest is understocked, just above the B-line, with a lot of low-quality beech due to previous ice storm damage and subsequent salvage. The silvicultural guide for this stand would suggest leaving it alone for another 10+ years, and then probably clear-cutting or applying low-density shelterwood. For this owner, it is the obvious choice for annual firewood cutting. These 15 acres can easily provide 100 cords in the next 10 years. Sometimes, the silvicultural guide does not give the best answer.

Forestry decisions can be further complicated by mixed messages from the landowner. Often, what folks tell me at first might not be the whole story. I have often heard: "It's not all about the money" to find out that the money is pretty darned important. On one project, a landowner wanted to clear a mature red pine plantation for pasture. They said they were not concerned with the income, and were interested in a "natural" forest with high stocking in the other areas. The initial clearing went well, and the first check came right away. They looked at the check with their mouths open, and asked if they could cut any more red pine. We ended up clearing all their plantations. The checks rolled in. Then they wanted to start on the native hardwoods, but still insisted that they preferred a natural look and shady conditions. We marked the hardwoods for "individual tree and small group selection." It was a light improvement cut to buffer the aesthetics of the clearings. When the hardwood checks started, they wanted another change: Since the firewood paid a low stumpage rate, they wanted to leave the low-grade standing with the theory that they would cut these themselves and make the "big bucks" of firewood processing. But they wanted to cut more sawlogs also. Essentially, it was high-graded, which I am not proud of. So, what they told me at first was not anything like what they really wanted. If they had said "Show me the money" on the first meeting, it would have gone better. Twenty years later, the clearings have regener-

ated well, and the hardwoods regenerated to weed species. They never cut the firewood trees, as you might guess.

I had a project a few years ago, where the client had taken a capital loss that year. He wanted to sell his timber, even though the market was low, to have his offsetting capital gain in the same year. On another farm, a particular stand is delegated to producing a couple loads of logs each year to pay property taxes. So there are all sorts of project goals that overlap, and sometimes interfere with the "pure practice of silviculture." But these are reasonable and real-world reasons for owning and managing forestland.

The best decisions are well thought out, and based on good information. And they are framed in reasonable objectives for each stand, and the overall ownership based on a cohesive philosophy. In the next installment, we will look at an overview of silvicultural options. ■

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